

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): An isolated and purified polynucleotide, encoding a codeinone reductase enzyme from an alkaloid poppy plant, wherein said codeinone reductase enzyme ~~is as set forth in~~ ~~comprises~~ SEQ ID NO: 26, ~~SEQ ID NO: 27, SEQ ID NO: 28, or SEQ ID NO: 29.~~

Claim 2 (original): A polynucleotide according to claim 1, selected from the group consisting of genomic DNA, cDNA or synthetic DNA.

Claim 3 (canceled)

Claim 4 (previously presented): A polynucleotide according to claim 1, lacking the native leader sequences or any of the 5' or 3' untranslated regions of the polynucleotide.

Claim 5 (previously presented): A polynucleotide according to claim 4, wherein the native leader sequences or any of the 5' or 3' untranslated regions are replaced with exogenous regulatory sequences which regulate enhanced expression of the polynucleotide in an expression system.

Claim 6 (currently amended): A polynucleotide according to claim 1, which encodes ~~a~~ codeinone reductase enzyme ~~of~~ from *Papaver somniferum*.

Claim 7 (previously presented): A polynucleotide according to claim 1, which is a synthetic polynucleotide comprising one or more codons preferred for expression in plant cells.

Claim 8 (currently amended): An isolated and purified polynucleotide which codes for prokaryotic or eukaryotic expression of a codeinone reductase enzyme from an alkaloid poppy plant, wherein the polynucleotide is expressed in an environment selected from the group consisting of the extracellular environment, an intracellular membrane compartment, intracellular cytoplasmic compartment or combinations, and wherein said codeinone reductase enzyme is as set forth in comprises SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 28, or SEQ ID NO: 29.

Claim 9 (original): A polynucleotide according to claim 8, comprising a nucleotide sequence which directs expression of the codeinone reductase enzyme with respect to a particular cellular compartment or the extracellular environment.

Claim 10 (currently amended) An isolated and purified polynucleotide having a sequence which is complementary to all or part of the sequence of a polynucleotide according to claim 1, encoding a codeinone reductase enzyme from Papaver somniferum, selected from the group consisting of:

the polynucleotide sequence of SEQ ID NO: 20;

a polynucleotide sequence which hybridizes under stringent conditions to complementary sequences of SEQ ID NO: 20; and

a polynucleotide sequence which is an allele of SEQ ID NO: 20;

wherein said polynucleotide codes for a codeinone reductase enzyme which has codeinone reductase activity.

Claim 11 (previously presented): A recombinant DNA construct comprising the polynucleotide according to claim 1.

Claim 12 (original): A DNA construct according to claim 11, which is a viral or plasmid vector.

Claim 13 (previously presented): A DNA construct according to claim 11 capable of directing prokaryotic or eukaryotic expression of the polynucleotide encoding a codeinone reductase enzyme.

Claim 14 (previously presented): A DNA construct according to claim 11, comprising a promoter suitable to control the expression of the polynucleotide.

Claim 15 (original): A DNA construct according to claim 14, wherein the promoter is endogenous.

Claim 16 (original): A DNA construct according to claim 14, wherein the promoter is derived from nos, cauliflower mosaic virus or subterranean clover mosaic virus.

Claim 17 (original): A DNA construct according to claim 12, wherein the plasmid is pCAL-c.

Claim 18 (original): A DNA construct according to claim 12, wherein the plasmid is pGEM-T.

Claim 19 (original): A DNA construct according to claim 12, wherein the plasmid is pFastBacI.

Claims 20-42 (canceled)

Claim 43 (previously presented): A method for preparing plants which overexpress a codeinone reductase enzyme, comprising transfecting or transforming a plant cell, a plant part or a plant, with the polynucleotide according to claim 1.

Claim 44 (original): A method according to claim 43, wherein the plant is an alkaloid poppy plant.

Claim 45 (original): A method according to claim 44, wherein the poppy plant is *Papaver somniferum*.

Claims 46-58 (canceled)

Claim 59 (original): The polynucleotide sequence encoding codeinone reductase comprised in microbial deposit DSM 12737.

Claims 60-62 (cancelled)

Claim 63 (new): A method for transfecting or transforming a plant, comprising transfecting or transforming a plant cell, plant part, or plant with a polynucleotide according to claim 1.

Claim 64 (new): A method for transfecting or transforming a plant, comprising transfecting or transforming a plant cell, plant part, or plant with a polynucleotide sequence comprising SEQ ID NO: 20 and wherein said polynucleotide codes for a codeinone reductase enzyme which has codeinone reductase activity.

Claim 65 (new): A method for transfecting or transforming a plant, comprising transfecting or transforming a plant cell, plant part, or plant with a polynucleotide sequence which hybridizes under stringent conditions to the complementary sequences of SEQ ID NO: 20 and wherein said polynucleotide codes for a codeinone reductase enzyme which has codeinone reductase activity.

Claim 66 (new): A method for transfecting or transforming a plant, comprising transfecting or transforming a plant cell, plant part, or plant with a polynucleotide sequence which is an allele of SEQ ID NO: 20 and wherein said polynucleotide codes for a codeinone reductase enzyme which has codeinone reductase activity.

Claim 67 (new): A polynucleotide sequence which contains at least 95% homology to SEQ ID NO: 20 and wherein said polynucleotide codes for a codeinone reductase enzyme which has codeinone reductase activity.